

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION**
Washington, D.C. 20554

In the Matter of)	
)	
Amendment of Part 90 of the)	WT Docket No. 01-146
Commission's Rules and Policies for)	RM-9966
Applications and Licensing of Low)	
Power Operations in the Private)	
Land Mobile Radio 450-470 MHz)	
Band)	

To: The Commission

COMMENTS OF THE TORO COMPANY

The Toro Company ("Toro"), by its attorneys and pursuant to Section 1.415(a) of the Commission's rules, 47 C.F.R. § 1.415(a), hereby submits its comments in the above-captioned proceeding. In this proceeding, the Commission has proposed adopting many of the proposals set forth by the Land Mobile Communications Council ("LMCC"). Toro is generally supportive of the LMCC's proposals and the tentative conclusions reached by the Commission in its *Notice of Proposed Rule Making* ("NPRM").¹ However, as detailed below, Toro urges the Commission to make further changes to the rules and policies affecting low power operations in the 450-470 MHz band in order to maximize spectrum efficiency and ensure the continued protection of low power operations in the 450-470 MHz band.

I. Statement of Interest.

Toro offers a series of irrigation control products for golf course applications as well as for non-golf course environments. Toro's products utilize low power,

¹ In the Matter of Amendment of Part 90 of the Commission's Rules and Policies for Applications and Licensing of Low Power Operations in the Private Land Mobile 450-470 MHz Band, Notice of Proposed Rulemaking, WT Docket No. 01-146, FCC 01-199 (rel. July 24, 2001) ("NPRM").

narrowband frequencies in the 450-470 MHz band, and thus Toro will be directly affected by the outcome of this proceeding.

Although Toro offers a variety of products in order to suit the individual needs of its customers, the products all share common functions. For example, Toro's equipment provides irrigation managers on golf courses with the ability to locate and communicate by voice with groundskeeper staff via two-way mobile handheld units. These units also are equipped with a Dual Tone Multi-Frequency ("DTMF") keypad, much like a telephone keypad. By following a programmed pattern on the DTMF keypad, the mobile handheld user can also send non-voice instructions to activate or deactivate remote satellite units, such as sprinkler heads. Multiple sets of instructions can be sent via the handheld units, depending on the golf course's ever-changing irrigation needs.

The voice and non-voice capabilities of Toro's equipment permit thousands of golf courses across the United States to manage the extraordinarily complex task of managing the irrigation systems for a highly expensive resource. The current power levels for low power operations in the 450-470 MHz band do not offer Toro's customers the power limits and antenna heights necessary to counter the physical site restraints, topographic barriers, and man-made barriers encountered on golf courses. Accordingly, Toro supports the proposals set forth by the LMCC, with certain modifications explained below.

II. Toro Supports the Commission’s Proposal to Adopt the LMCC Petition.

A. Group A Frequencies

The LMCC proposed that the Commission categorize low power users in the 450-470 MHz band, based on the specific nature of the users’ activities. Thus, for example, businesses using low power channels for voice operations and non-voice, remote control operations in an “on-campus” environment could be licensed to operate on Group A frequencies.² Group A frequencies would be site-coordinated under the proposal, and users would be authorized to operate at higher power with taller antenna heights than are currently permitted under Commission rules. These more liberal operating parameters are necessary to support requirements for highly specialized short range "on campus" radio operations of many users of these frequencies.

The environment in which Toro’s golf course customers operate is equivalent to an “on-campus” environment. A typical golf course licensee of a Toro radio system operates within the contiguous area of a golf course, approximately 150-300 acres, to support course maintenance and irrigation operations. The proposed higher power limits and taller antennas are needed for these systems in order to provide reliable signals throughout each golf course. Furthermore, much of the Toro equipment already deployed in the field operates on frequencies identified by the Commission for inclusion in Group A. For these reasons, Toro strongly supports the Commission’s tentative conclusion to adopt the LMCC proposal with respect to Group A channels.

B. Group B Frequencies

In addition, the LMCC proposed 10 channels for low power non-voice (data primary) use, categorized in Group B. The proposal would maintain the existing 2 watt transmitter output power (“TPO”) limit on mobile units and the 7 meter above ground level (“AGL”) height restriction on fixed/base units. Toro supports the LMCC proposal, with certain modifications.

Specifically, Toro suggests that the Commission should maintain the 2 watt TPO limit on mobile units, but provide increased flexibility for fixed/based units comparable to the antenna heights permitted for central alarm station operations. Section 90.267(a)(7)(ii) of the Commission’s rules provides that “central alarm stations operating on frequencies allocated for central alarm station protection operations, may utilize antennas mounted no more than 7 m. (20 ft.) above a man-made supporting structure, including antenna structures.” 47 C.F.R. § 90.267(a)(7)(ii).

The Commission determined that a less restrictive antenna height for central alarm stations was justified because of “the confined geographic area and [because] a single coordinating body [can] control the likelihood of interference.” *Amendment of Part 90 of the Commission’s Rules and Regulations to Reserve Frequencies for Emergency Electrical Alarm Protection*, Memorandum Opinion & Order, 57 RR 2d 1078, para. 7 (1985) (“*Central Alarm Order*”). Toro submits that the communication requirements of golf course operations would be similarly confined to relatively small “on campus” geographic areas, in this case, the contiguous areas of a golf course, thus negating any potential interference problems with other users. Indeed,

² *NPRM* para. 8.

Toro's equipment is equipped with alarm system capabilities that serve the same essential purpose as central alarm stations. Toro's equipment protects against user errors and alerts users to system communication errors in order to avoid costly over- or under-irrigation situations.

In addition, although there are now multiple coordinating bodies, the technological advances made since 1985, when the Commission released the *Central Alarm Order*, permit the frequency coordinating bodies to centralize database information and control the likelihood of interference. Accordingly, the Commission should revise Section 90.267(a)(7)(ii) to include operations on Group B frequencies.

III. Toro Supports the Commission's Proposed Amendments to Power Limits.

In its Petition for Rulemaking, LMCC requested that equipment on Group A channels be permitted to operate with a maximum of 5 watts effective radiated power ("ERP") for mobile units, as opposed to the current power limit of 2 watts TPO. The Commission noted in the *NPRM* that 5 watts ERP would actually be a more restrictive power limit than 2 watts TPO. Instead, the Commission proposed to permit Group A mobile units to operate with a maximum of 5 watts TPO. Toro supports the revised proposal and urges the Commission to adopt the 5 watt TPO power limit. A 5 watt TPO power limit will permit Toro and other on-campus users to operate at the power limits they need in order to provide effective coverage.

In addition, the Commission is proposing to adopt, without modification, the LMCC's proposal to allow Group A channel fixed/base facilities to operate with a maximum power limit of 20 watts ERP and an antenna height of 23 meters (75 feet) above ground level (AGL). Toro supports this proposal. A power limit of 20 watts

ERP and maximum antenna height of 23 meters AGL should provide Toro customers the flexibility they need to cover all areas of their courses, without causing harmful interference to off-site low power users. Toro agrees that a 20 watt TPO power limit is unnecessary to accommodate low power users.

IV. Toro Opposes Any Prohibition Against Non-voice Operations on Group A Channels or Voice Operations on Group B Channels.

The Commission's rules currently permit all of the channel pairs listed in Group A to be used for non-voice "telemetry" operations on a secondary basis. In practice this has meant that the same channel could be used to meet voice or non-voice requirements. For example, greens keepers or golf course employees now can use Toro portable handsets to speak with co-workers from wherever they may be working on the course. These same handsets are also routinely used to initiate non-voice telecommands to activate portions of the course irrigation system from remote locations on the course.

Toro strongly supports continuation of the spectrum-efficient, flexible use of Group A and Group B channels by permitting voice and non-voice uses, subject to primary and secondary use limitations, on these Group A and Group B channels. Toro supports the LMCC proposal to permit Group A channels to be designated primarily for voice operations with non-voice operations authorized on a secondary basis. Toro also supports the Commission's tentative conclusion that the current secondary status of non-voice "telemetry" uses on Group B channels should be removed. The Commission should also adopt the LMCC proposal to make non-voice "data" uses primary on these channels and maximize spectrum efficiency by

permitting voice operations on the Group B non-voice channels on a secondary, non-interfering coordinated basis.

V. The Commission Should Not Adopt Duty Cycles But Should Permit Continuous Data Transmissions, in Order to Accommodate a Wide Variety of Non-Voice Operations.

In the *NPRM*, the Commission sought comment on whether continuous data transmissions should be permitted on Group B frequencies, or whether those frequencies should be limited to “duty cycles”. The Commission does not define the term “duty cycle” in the *NPRM*. However, to the extent that such a duty cycle requirement would limit the ability of low power users to provide sporadic, intermittent non-voice communications, Toro submits that a duty cycle requirement would be spectrally inefficient. Toro equipment is designed to operate on an intermittent basis, whenever an irrigation manager determines that watering is required in a particular area of the course. Such occasions do not fall neatly into any easily definable pattern that would appear to be required under a duty cycle regime. To the contrary, Toro equipment uses low power channels quite randomly. This is particularly true when voice communications are taken into account, due to the unpredictable nature and length of voice communications needs. Accordingly, Toro strongly opposes the implementation of any duty cycle requirement on Group B channels.

VI. High Power Users Currently Located in the 450-470 MHz Band Should Be Removed as Soon as Possible.

In order to avoid potential interference to legitimate low power users, Toro urges the Commission to establish procedures for rapidly clearing the designated low power bands of all high power users. Apparently neither the Commission nor

frequency coordinators know the exact number or operating frequency of high power users currently operating in the band, but Commission estimates apparently indicate that there are roughly 5,000 high power users operating throughout the United States on designated low power bands.

High power users on these bands present an enormous interference potential to low power users. Although high power users were required to certify that they would not cause harmful interference to lower power users, there is no mechanism with which to patrol compliance with this requirement.

In order to maximize use of the low power band by low power users, the Commission should require high power users of designated low power frequencies to relocate within eighteen months of the release of the Commission's Order in this proceeding. This time period will afford high power users with a fiscal year and a half in which to plan and allocate costs for relocation. It will also provide low power users the assurance they need that high power users will not cause long-term interference problems in the 450-470 MHz band.

VII. Miscellaneous.

A. Toro Supports Current Designations for Base and Mobile Operations.

The Commission currently assigns low power channels in pairs, with both base and mobile operations permitted on the low side of the pair but only mobile operations on the high side of the pair. *NPRM* para. 31. Toro supports the continuation of this procedure as workable and clearly understandable.

B. Toro Supports A Fixed Number of Frequencies in Each Frequency Group.

Toro opposes having a maximum or minimum number of frequencies within each new frequency group, because anything other than a fixed number could lead to confusion and uncertainty. For example, if equipment is operating on a Group A frequency, and that frequency is deleted from Group A or moved to another Group of frequencies, then the operating parameters for that equipment will have been altered, to the possible detriment of the licensee.

VIII. Conclusion.

For the reasons set forth above, Toro supports the adoption of the LMCC proposal, with the modifications suggested by Toro. In addition, Toro strongly opposes any proposal to prohibit non-voice operations on Group A frequencies or voice operations on Group B frequencies.

Respectfully submitted,

THE TORO COMPANY

/s/ David A. O'Connor
George Y. Wheeler
David A. O'Connor

HOLLAND & KNIGHT LLP
2099 Pennsylvania Ave., N.W.
Suite 100
Washington, D.C. 20006
Tel: (202) 955-3000

Its Attorneys

Dated: October 12, 2001